DOCKET NO.: BIOD-0026 **PATENT**
Application No.: 09/989,092

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. **(Currently Amended)** A method to determine if a sample of cells contains dysplastic or carcinomic cells, the method comprising the steps of:

a) contacting the sample with a solution of 5, 10, 15, 20-tetrakis (carboxyphenyl) porphine (TCPP) under conditions permitting binding of the TCPP to components of the abnormal dysplastic or carcinomic cells, if any are present, wherein the solution of TCPP comprises the TCPP pre-dissolved in basified alcohol;

b) removing unbound TCPP from the sample; and

c) detecting TCPP fluorescence in the sample, the presence of TCPP fluorescence being indicative that the sample contains dysplastic or carcinomic cells.

2. **(Currently Amended)** The method of claim 1, wherein the sample is selected from the group consisting of sputum samples, cervical swabs, bronchial washings, fine needle aspiration and core biopsies of thyroid and breast, bladder washings, ~~urine,~~ and mouth washings~~, stool samples, blood or fractions thereof, lymph, cerebrospinal fluid, bone and bone marrow~~.

3. **(Original)** The method of claim 1, wherein the sample is fixed in a fixative selected from the group consisting of formaldehyde, methanol, ethanol, isopropanol and any combination thereof.

4. **(Original)** The method of claim 3, wherein the fixative is 95% ethanol.

5. **(Original)** The method of claim 1, wherein the sample is adhered to a solid support.

6. **(Original)** The method of claim 5, wherein the solid support is a microscope slide.

7. **(Original)** The method of claim 1, wherein the sample is suspended in a liquid medium.

8. **(Previously Presented)** The method of claim 1, wherein the solution of TCPP is diluted into a buffered aqueous solution.

9. **(Original)** The method of claim 8, wherein the solution of TCPP is buffered to a pH between about 5.8 and about 6.7.

10. **(Original)** The method of claim 8, wherein the solution further comprises one or more reagents that reduces background fluorescence, prevents oxidation of the TCPP, or prevents quenching of the TCPP fluorescence.

11. **(Original)** The method of claim 1, wherein the concentration of TCPP in the sample is between about 4 and about 100 μg/mL.

12. **(Original)** The method of claim 1, wherein the sample is contacted with the TCPP for between about 0.2 minute and about 2 hours.

13. **(Previously Presented)** The method of claim 1, wherein, during the contacting, the sample is maintained at a temperature between about 23°C and about 42°C.

14. **(Original)** The method of claim 5, wherein the TCPP fluorescence in the sample is detected visually.

15. **(Original)** The method of claim 5, wherein the TCPP fluorescence in the sample is detected with a slide reader.

16. **(Original)** The method of claim 7, wherein the TCPP fluorescence is detected with a fluorometric flow cytometer.

17. **(Original)** The method of claim 1, wherein the detecting step is performed between about 1 hour and about 24 hours after the removing step.

18. **(Original)** The method of claim 1, further comprising the step of determining the percentage of cells in the sample that are TCPP-fluorescent.

19. **(Original)** The method of claim 18, wherein samples comprising more than about 1% fluorescent cells are categorized as containing abnormal precancerous or cancerous cells.

20. **(Original)** The method of claim 18, wherein the step of determining the percentage of cells in the sample that are TCPP-fluorescent comprises quantitating TCPP fluorescence intensity in the sample in a manner that correlates the fluorescence intensity with a percentage of cells in the sample containing TCPP.

21. **(Original)** The method of claim 20, wherein TCPP fluorescence is quantitated by contacting the sample with a detectable marker that binds to all cells in the sample, removing unbound detectable marker, and establishing a ratio of TCPP fluorescence and the amount of the detectable marker in the sample.

22. **(Original)** The method of claim 21, wherein the detectable marker is a fluorescent compound.

23. **(Original)** The method of claim 1, which further comprises, upon detecting TCPP fluorescence in the sample, characterizing the fluorescing cells for metaplasia, dysplasia or carcinoma.

24. **(Original)** The method of claim 23, wherein the characterizing comprises classifying the fluorescence intensity of fluorescent cells and correlating the fluorescence intensity with the metaplastic, dysplastic or carcinomic state of the cells.

25. **(Original)** The method of claim 23, wherein the characterizing comprises classifying the fluorescent cells for one or more morphological features selected from the group consisting of cell shape, cell size, clustering of cells, amount of degeneration of cells or cell clusters, number of nuclei, size of nuclei, visibility of cell membrane and presence of nuclear debris, and correlating the morphological features with the metaplastic, dysplastic or carcinomic state of the cells.

26. **(Original)** The method of claim 23, wherein the characterizing comprises classifying the fluorescent cells for fluorescence intensity and for one or more morphological features selected from the group consisting of cell shape, cell size, clustering of cells, amount of degeneration of cells or cell clusters, number of nuclei, size of nuclei, visibility of cell membrane and presence of nuclear debris, and correlating the fluorescence intensity and morphological features with the metaplastic, dysplastic or carcinomic state of the cells.

27. **(Previously Presented)** The method of claim 26, wherein the total number of the morphological features and fluorescence intensity displayed by the fluorescent cells is used as a factor in characterizing the fluorescing cells for metaplasia, dysplasia or carcinoma.

28. **(Previously Presented)** The method of claim 26, wherein the pattern of morphological features and fluorescence intensity is used as a factor in characterizing the fluorescing cells for metaplasia, dysplasia or carcinoma.

29. **(Original)** The method of claim 23, wherein the fluorescent cells in the sample are compared with non-fluorescent cells from the same sample or from a second sample from the same patient.

30. **(Original)** The method of claim 29, wherein the fluorescent cells are separated from the non-fluorescent cells by fluorometric flow cytometry.

31. **(Original)** A method of diagnosing a patient for early-stage cancer or a pre-cancerous condition of a selected tissue or organ, the method comprising:

a) obtaining a sample of cells from the selected tissue or organ; and

b) determining if the sample of cells contains abnormal precancerous or cancerous cells by the method of claim 1, a positive determination thereof being indicative of a positive diagnosis of early-stage cancer or a pre-cancerous condition of the patient's selected tissue or organ.

32-34. **(Canceled)**

35. **(Currently Amended)** A method of detecting dysplastic or carcinomic cells in a selected target tissue of a patient, the method comprising the steps of:

a) obtaining the target tissue from said patient;

b) introducing into the target tissue a solution of TCPP under conditions permitting binding of the TCPP to components of the dysplastic or carcinomic cells, if any are present, wherein the solution of TCPP comprises the TCPP pre-dissolved in basified alcohol;

c)~~b)~~ removing unbound TCPP from the target tissue; and

d)~~c)~~ detecting TCPP fluorescence in the cells of the target tissue, the presence of TCPP fluorescence therein being indicative that the target tissue contains dysplastic or carcinomic cells.

36. **(Original)** The method of claim 35, wherein the target tissue is selected from the group consisting of lung, breast, prostate gland, cervix, throat, bladder, oropharnyx, skin and gastrointestinal tract.

37-48. **(Canceled)**